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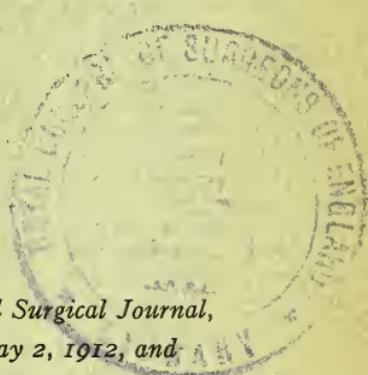
The Influence of Antivivisection on Character

BY

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THE INFLUENCE OF ANTIVIVISECTION ON CHARACTER.*

BY W. W. KEEN, M.D., PHILADELPHIA.

"In this controversy [vivisection] there should be no bitterness. . . . Do not let us attempt to browbeat or call names. . . . Vivisection tends to weaken character. . . . Nothing which hurts the character can be right." (Rev. Dr. Floyd W. Tomkins, President of the American Antivivisection Society, in the *Ladies' Home Journal*, March, 1910.)

I ACCEPT the test proposed by Dr. Tomkins, and quoted in the above motto, "Nothing which hurts the character can be right." Let us, therefore, study what is the effect of antivivisection on the character of its advocates.

I. The most violent and vindictive passions have been aroused and fostered, especially among women — the very flower of our modern civilization. Let us see whether they have shown "bitterness" or "called names." I have rejected much oral testimony I could use and have drawn my evidence from only a very small portion of the literature at my disposal.

At the beginning of this article I have placed the photograph of a remarkable letter which contains an asserted prayer to the deity calling down curses by "a dozen women" upon my long-since sainted mother. It needs no comment from me save that the "horror" mentioned in this letter was excited by an article which I published in the *Ladies' Home Journal* for April, 1910, in which I recited a few of the *benefits to humanity* which had resulted from vivisection. The only

*An address read before the Surgical Section of the Suffolk District Medical Society, Boston, March 20, 1912.

Arch-Fiend:

I read with horror your article in the Ladies' Home Journal on vivisection.

I hope your mother if she is living will die in the most terrible torture, and if she is dead that her soul will never know rest for having given life to such a vile monster as you is the nightly prayer of a dozen women who

indited this

Photograph of a letter received by myself in August, 1910. Both envelope and letter were typewritten, with no place, no date and no signature; only the postmark showed that the letter came from Los Angeles.

clue even to the place from which the letter comes is the postmark.

Let me quote another earlier anonymous letter I have before me. This is from Philadelphia. Instead of the usual address "Dear Sir," it begins, "You Fiend." I had not then been promoted to "Arch-fiend" in Satan's Hierarchy. The writer exclaims, "Oh, that you all could be put through the same torture that you inflict on these helpless ones." As I am not a vivisectionist this ardent wish fails to terrify. I am an advocate of vivisection because I *know* how greatly it has helped me during all my professional life in saving life and suffering.¹

If two letters will not convince, here is a third. This, from Baltimore, also the result of the same article, was from a writer who had the courage to sign her name and address.

" You would appear even the more fiendish on account of your superior intelligence. . . .

¹ In the *American Journal of the Medical Sciences* for July, 1865, p. 67, Dr. S. Weir Mitchell, the late Dr. Morehouse and I published a paper on the "Antagonism of Atropia and Morphia," based upon observations and experiments in the Army Hospital for Injuries and Diseases of the Nervous System. The reason which caused us to make this investigation was that we desired to find better means for "soothing the pain of those terrible cases of neuralgia" following gunshot wounds of large nerves. These are accurately described in the paper as causing "anguish" and "agony," — no word could be too strong. Accordingly, in our efforts we tried a number of common and some uncommon drugs, and finally found that morphine (the active principle of opium) was the best remedy and yet had many disadvantages. Ultimately we found that by combining with it a certain amount of atropine (the active principle of belladonna) we obtained the best results. The facts discovered in our investigations have long since become merged in the common knowledge of the profession, and standard tablets with different proportions of the two drugs are manufactured and used all over the world. Most of our patients operated on (entirely by hypodermic injections) were sorely in need of relief. A few were convalescents. In all cases we avoided telling them what drug was being used, for every one knows how imagination, fear, or other emotion would alter the rate of the pulse or of the breathing. Not one man was injured in the least. Not one ever complained. Many thousands of human beings have been greatly benefited and many lives have been saved through the knowledge thus obtained.

I have expressly mentioned these facts in some detail because we have been attacked in their pamphlets by the antivivisectionists for these experiments, which are described as "human vivisection."

The future of a vivisectionist is a veritable hell. You, I understand, are a man advanced in years [the calendar, alas! seems to justify this shocking statement] soon to go before the bar of justice, Can you meet your God with the terrible cries ringing in your ears of these creatures, our helpless brothers, made by his hand, that you have drawn and quartered? How they must haunt you. . . . When your time comes to die, every cry of pain and anguish that you have been the cause of producing in these helpless creatures will follow you to the depths of hell." Yet I have "drawn and quartered" not even so much as a mouse.

But this same lady tells me that she had survived one of the most serious abdominal operations that could be done — an hysterectomy. This operation was so perilous that until Lister had devised the antiseptic method it was never even thought *possible*, and its success at the present day is due chiefly to experiment upon animals. The writer of the letter, therefore, is herself a witness to the benefit of vivisection.

Later on she says, "If they would only use vivisectors for their experiments, it would soon be considered unnecessary." Her gentlest wish, therefore, is for human vivisection, and doubtless "without anesthetics." Per contra, in the newspapers of May 6, 1911, a dispatch states that seventeen medical students had offered themselves for experimental inoculation with cancer, an offer which was, of course, refused, as animals can be used.

A curious statement in the letter is, "I understand the Rockefeller Institute has had four or five of its laboratories burned, the animals destroyed, rather than have them fall into the hands of these wretches, and if this thing were more widely known, every medical college in the country

would be razed to the ground and the doctors tarred and feathered." The insurance companies, I am quite certain, have never heard of the one laboratory which the Rockefeller Institute possesses having been burned. But what a strange exhibition of kindness it is to gloat over the fact that the poor animals in these supposed laboratories had been roasted to death "without anesthetics."

If three instances are not sufficient, here is a fourth,—a signed letter from Chicago. Referring to one case which I had published as an illustration of the value of vivisection in saving human life, she says, "My sympathy for the parents of that young man . . . would have been deep, but not so keen as for a mother dog who saw her puppy tortured to death on a dissecting table. . . . Even if you did save a man's life, *was it worth while?*" (Italics in the letter!) This lady wrongly assumes that the puppy was "tortured to death," i. e., without anesthetics. This, I am glad to say, is not true, as I shall show later on. To her question, "Was it worth while?" I can only say, "Ask his father and mother."

And this is the ennobling influence of antivivisection!

A fifth communication is from a lady who was personally acquainted with myself and my family. She sent me a pamphlet with some good advice, ending with the terse injunction, "Do God's work, not the Devil's," and had the courage to sign her name.

A sixth lady sent me (anonymously) an article from one of our magazines, with many marginal annotations and much underscoring. From this I select a few sentences.

"Millions of people regard him [the vivisector]

with loathing, and shudder with horror at his name. . . . Frightful as the sufferings of this tortured dog must be, I would rather be in its place than yours when your soul is summoned to its final judgment to receive judgment without mercy. [This seems to be a favorite threat of my correspondents.] May God so deal with every fiend incarnate who has thus tortured defenseless creatures. . . . All the demons and fiends do not dwell in Hades. Some are made in the image of God, but have hearts blacker and more cruel than the arch-fiend himself. These are the vivisectors who ‘benefit’ mankind.”

I have received very many more such letters, — usually anonymous. These six may serve as samples.

I would willingly accept the supposition of unbalanced minds as an explanation and palliation for such letters but for their number and for the fact that they so entirely coincide with almost all the “repulsive literature” (to use Lord Coleridge’s words) published by the various antivivisection societies.

A brief search through only a part of my file of this antivivisection literature enables me to cull the following evidences of a similar debasing violence and vindictiveness. The list could easily be extended.

“The art of torture has been carried to a perfection which the devildoms of Spain in the old days of the Inquisition could not equal in ingenuity or pitilessness.”

“Vivisection is the anguish, the hell of science. All the cruelty which the human or rather the inhuman heart is capable of inflicting is in this one word. Below it there is no depth. This word lies like a coiled serpent at the bottom of the abyss.”

" Animals are dissected alive, — usually without the use of anesthetics."

" The vivisector keeps his victim alive while he cuts it up."

" Vivisection founded on cruelty, supported by falsehood, and practiced for selfish ends."

" The vivisector is less valuable to the world than the animals he destroys."

" A thing I know to be damnable whatever the results."

" An organized system of barbarity."

" Vivisector and criminal become interchangeable terms."

" Cowards who perpetrate hideous crimes."

" Experiments on living animals is a system of long-protracted agonies, the very recollection of which is enough to make the soul sick as if with a whiff and an after-taste of a moral sewer."

" Impious barbarity of the vivisector."

" All other forms of sinful cruelty are comparatively trifling compared with the horrors of vivisection."

" Deliberate dabbling in blood and agony."

" Cruelty the inevitable and odious spawn of secret vivisection."

" Blood-stained hands of the grim tormentors."

" Bloody mass of agony."

" Devilish inventions of unbalanced mentality."

At a hearing before a Committee of the Legislature of Pennsylvania, I heard myself and others who were advocating the humane work of vivisection called " hyenas " by a woman.

Briefer descriptive terms are as follows:

Scientific hells
torture house
orgy of cruelty
halls of agony

temples of torment
cruelty of cruelties
infernal work
hellish wrong

inhuman devil	devil's work
devils incarnate	lust of cruelty
scientific murder	scientific assassination
abominable sin	torture of the innocent
devilish science	black art of vivisection
fiends incarnate	satanic
damnably mean	fiends
arch-fiend	demons
master demon	human monsters
	diabolical vivisection

Antivivisection writers nearly always state, assume or imply that all experiments are "tortures," i. e., that anesthetics are not used. This is wholly erroneous.

In Great Britain, where all experiments are returned to the government, the following table for 1906 (the latest I happen to have) will show how utterly indefensible is such an assumption. It is a fair presumption that about the same average exists in the United States.

	Per cent.
Inoculations, etc., not involving any operation,	93.96
Animals killed under anesthetics,	3.44
Animals allowed to recover from anesthetic but nothing likely to cause pain and no further operation allowed without anesthetic,	2.60
	<hr/>
	100.00

In other words, only *26 animals out of 1,000* could by any possibility have suffered *any* pain, and very few of these any serious pain. Is this the torture and agony so constantly harped upon?

Many of the instances cited in antivivisection literature are taken from researches — such as Magendie's — which were made before anesthetics were discovered, over sixty-five years ago.

The rest in which real cruelty was inflicted, and which if done now would be condemned by all modern research workers as freely as by the anti-vivisectionists themselves, were done almost wholly on the continent, and often by persons who are now dead. In discussing vivisection to-day, these should be excluded, or their dates and countries indicated, for the public, ignorant of medical history, are misled into supposing that these persons are living and practicing these methods to-day and in America.

In one of the anonymous replies to my paper on the "Mis-Statements of Antivivisectionists," I am represented as the apologist and advocate of experiments of which twice over at the Senate Committee hearing and again in my letter to Mr. Brown I had expressed my utter disapproval. I am always willing to face a truthful charge, but it is a hopeless task to meet untruthful charges, especially when the author is ashamed of his own name.

"Hell at Close Range" is the title given by Miss Ellen Snow to a leaflet dealing with the work of the Rockefeller Institute. One would scarcely expect such fierce heat from so frosty a name.

At this Institute, by experiments upon twenty-five monkeys and one hundred guinea pigs, most of which animals recovered, has been discovered a serum that has brought the former death-rate of cerebrospinal meningitis of 75 or 90% down to 20% and less. Is it because of this beneficent work that it is called "Hell"?

At this Institute has been discovered a means of transfusion of blood that has already saved scores of human lives. Is this the reason for calling it "Hell"?

At this Institute a method of criss-crossing arteries and veins, which almost always run along-

side of each other, has been discovered by which impending gangrene has been prevented. Does this make it a "Hell?"

At this Institute the cause and the cure of infantile paralysis are being sought. Are such investigations carried on in "Hell?"

Miss Snow in this same leaflet expresses in italics her horror at the idea of the proposition of the Institute "to build a hospital where the experiments may be continued on human beings." It may be of interest to her and also to others to know that this hospital was opened in October, 1910, and that the public, undeterred by her horror, have thronged to it in such numbers that there have not been beds enough for the several hundreds of disappointed applicants.

An editorial in the *Journal of Zoophilic* for January, 1909, p. 2, records a gift to this Rockefeller Institute, "an institution in New York where vivisection should be practiced with the idea of achieving as great an advance as possible in the war of science against human suffering," and adds, "but the gift only fanned into fury the opposition of the women to experiments on living animals, *no matter how great the anticipated benefit.*" Could cruel passion be better expressed?

Can a cause which so seriously injures the character of its advocates that they indulge in this prolific vocabulary of vituperation by any possibility have an uplifting influence? It eminently fulfills the proposed test — it "hurts the character and, therefore, cannot be right."

Are those who give loose rein to such passion fitted to form a sound and sane judgment upon the subject about which they write? This is especially true when the matter is one so technical as anatomical, physiological, chemical, pathological and surgical investigations as to which

they cannot be expected to know and, in fact, do not know anything. Even relatively few medical men are fitted by temperament and training to act as censors of such researches, much less those ignorant of medicine.

I believe that much of the passion shown in the above quotations is the result of ignorance. Most of the attacks upon vivisection, as I have said, assume or even state categorically that anesthetics are not used. Saving in the very rare cases in which the use of anesthetics would entirely frustrate the experiment, anesthetics are always used. This is done not only for reasons of humanity, but also because the struggles of a suffering animal would make delicate and difficult operations absolutely impossible, to say nothing of the danger of injury to the operator.

The always-quoted opinion of Professor Bigelow was founded upon what he had seen at the Veterinary School at Alford, France, in the pre-anesthetic days. Many absolutely false statements are made that anesthetics were not used in certain specified experiments, whereas the experimenters have expressly stated that anesthetics *were* used. Of such mis-statements by antivivisection authors I shall give some startling instances later. It is no wonder that the public has been thus misled. "Cutting up men and women alive" is an accurate description of every surgical operation, but we all know that while in comparatively few reports of surgical operations it is expressly stated that an anesthetic was used, such use "goes without saying."

One of the most frequent antivivisection statements is that "incomplete" or "slight" or "light" anesthesia means that the animal is fully able to feel pain and that when the eye resents a touch or there is muscular movement following

any act which would be painful when one is not anesthetized, pain is actually being inflicted. Mr. Coleridge says (Question 10,387 in his testimony before the Second Royal Commission on Vivisection), "What does 'anesthetized' mean? It means 'without feeling.' You cannot be slightly without feeling. You either feel pain or you do not."

Very recently when I had nitrous oxide gas given several times to a lady to bend a stiff elbow she struggled and writhed so hard as almost to throw herself out of the dentist's chair on to the floor. *Yet she was never conscious of the slightest pain.* In other words, while the motor nervous centers responded to my forcible bending movements and caused violent muscular struggles, the perceptive nervous centers felt no pain. But any spectator would surely have said that she was being "tortured." This is only one of hundreds of similar cases I and all surgeons have had.

In modern laboratory researches, ether or other anesthetics are almost always given. Extremely few exceptions occur, and then only with the consent of the director in each specific case. The actual conditions at the present day are well shown by the rules in force in practically all American laboratories of research. These rules have been in operation for over thirty years in one case and for more than ten years in others. In most laboratories in which students work, and where they are absolutely under the control of the director, the only animal used is the frog, and by "pithing" or decapitating it, it is made wholly insensible to any pain.

The idea that students privately "torture" animals, often, it is stated, out of mere curiosity, is absolutely false. I have been intimately asso-

ciated with students ever since 1860, first as a student and since 1866 as a teacher. I state, therefore, what I am in a position to know. Moreover, private experimental research takes time which our over-worked students do not have, and money which they cannot afford. It means the rent of a laboratory, the purchase of very expensive and delicate instruments, the rent of an animal room, the cost of the animals, and of their food and care, a man to look after them — for all modern surgical work on animals must be done with the same strict antiseptic care as on man or the experiment will surely fail and discredit the author — a total expense amounting to a very large sum.

I quote these rules in full:

RULES REGARDING ANIMALS.

I. Vagrant dogs and cats brought to this laboratory and purchased here shall be held at least as long as at the city pound, and shall be returned to their owners if claimed and identified.

II. Animals in the laboratory shall receive every consideration for their bodily comfort; they shall be kindly treated, properly fed, and their surroundings kept in the best possible sanitary condition.

III. No operations on animals shall be made except with the sanction of the director of the laboratory, who holds himself responsible for the importance of the problems studied and for the propriety of the procedures used in the solution of these problems.

IV. In any operation likely to cause greater discomfort than that attending anesthetization, the animal shall first be rendered incapable of perceiving pain and shall be maintained in that condition until the operation is ended.

Exceptions to this rule will be made by the director alone, and then only when anesthesia would defeat the object of the experiment. In such cases an anesthetic shall be used so far as possible and may be dis-

continued only so long as is absolutely essential for the necessary observations.

V. At the conclusion of the experiment the animal shall be killed painlessly. Exceptions to this rule will be made only when continuance of the animal's life is necessary to determine the result of the experiment. In that case, the same aseptic precautions shall be observed during the operation, and so far as possible the same care shall be taken to minimize discomforts during the convalescence as in a hospital for human beings.

(Signed) _____
Director of the Laboratory.

I may add that at the Rockefeller Institute regular trained nurses are employed and are on duty not only during the day, but at night when necessary.

Self-confessed total ignorance of a subject on which one gives extensive evidence is not often known, but Dr. Herbert Snow, of London, an authority among the antivivisectionists, is a case in point. Dr. Snow's evidence before the Royal Commission on Vivisection (1906) covers ten pages quarto and he answers 326 questions. In 1911 Dr. Snow visited America. In a letter in the Philadelphia *Ledger* of March 6, 1911, he makes the almost incredible statement that he gave all this evidence "in utter ignorance of the vivisection question."

Moreover, when asked by the Commission (Question 2242), "Do you find any fault with the present gentlemen who are licensed under the act?" he replied, "I do not," and again (Questions 2227 and 2228) he admits that both painful and painless experiments may sometimes be necessary.

But in other cases ignorance of physiology and anatomy is shown which would only excite a smile did it not gravely mislead the reader. I

shall only give a single illustration here. Others will be found elsewhere in this paper.

"The Nine Circles," with its sulphurous subtitle, "Hell of the Innocent," is an English book originally issued by the late Miss Frances Power Cobbe, in 1892. This edition had to be withdrawn on account of its false statements, especially as to the non-use of ether (see pp. 33-37). A second and revised edition was issued in 1893. This was "carefully revised and enlarged by a sub-committee especially appointed for the purpose," as the preface states.

On page 15 of the revised edition, it is correctly stated that Prof. Henry P. Bowditch, of the Harvard Medical School, in some experiments upon the circulation, etherized a cat and that "then its sciatic nerve was divided, etc." The sciatic nerve is the largest nerve in the body of man and animals and passes down the back of the leg. After division of the nerve the portion going down the leg *below* the place where the nerve was divided was stimulated by an electrical current. As this part of the nerve was wholly cut off from the spinal cord and brain, *by no possibility could any pain be felt*. Yet a Boston lawyer, in a leaflet published by the New England Antivivisection Society, comments on a similar experiment as follows: "It will be readily seen even by the casual reader that it involves an amount of agony beyond which science is unable to go." Just how the "casual reader" would be so well informed as to physiology when a lawyer and two doctors — not casual but intelligent and careful readers — got things totally wrong, is not stated. Dr. Bowditch published a correction of this misstatement in 1896 ("Advancement of Medicine by Research," p. 43). In spite of this, the New England Antivivisection Society in 1909, *thirteen*

years' after this public correction, was still distributing this lawyer's statement.

But in the "Nine Circles" (second edition, carefully revised by Dr. Berdoe and the committee) these experiments are alluded to as "experiments on *the spinal cord*!" [Italics mine.] Yet Bowditch did no operation upon the spinal cord. Miss Cobbe, not being an anatomist, might be pardoned for confusing the thigh and the spine of the cat, but surely Dr. Berdoe ought to have seen to it that "sciatic nerve" and "spinal cord" were not used as interchangeable terms.

Many years ago, after amputating a leg near the hip, I tried to see how long electrical stimulation of the sciatic nerve would cause the muscles of the amputated leg to contract. After four hours, during all of which time the muscles continued to react, I had to stop as I could give no more time to the experiment. According to the canons of antivivisection as voiced above, I should have continued to etherize the patient whose leg had been amputated, for he, just as much as Bowditch's cat, could feel "agony beyond which science is unable to go."

Let me give only two other surprising statements. In the *Journal of Zoophily* for January, 1910, is reprinted an article by Dr. Hadwen, of London. In this he criticises my reference (*Harper's Magazine*, April, 1909) to "an astringent named 'adrenalin.'" I had shown how valuable adrenalin had been in saving human life in certain surgical conditions, and also described the resuscitation, by means of adrenalin and salt solution, of a dog which had been "dead" for fifteen minutes. Dr. Hadwen concludes his paragraph thus: "But it does seem a pity that these new world vivisectors will not be able to

perform the resurrection miracle without first killing somebody to get at his kidneys." The presumable object of "getting at his kidneys" would be in order to make adrenalin from them. Now, adrenalin is *not made from the kidneys at all*, least of all from human kidneys, but from the adrenal glands of animals.

In the same article he vaunts the use of salt solution instead of the direct transfusion of blood, and rightly says he has "seen the most marvelous effects follow the injection of an ordinary saline solution into the venous system in cases of loss of blood." But he seems to be ignorant of the fact that this very saline transfusion was begun and perfected by experiments on animals. I commend to him Schwarz's essay (Halle, 1881) with its twenty-four experiments on rabbits and dogs, and Eberius' essay (Halle, 1883) with its ten experiments on rabbits and the record of eleven cases in which Schwarz's method had already been used in man. These essays were practically the beginning of our knowledge of the advantages of the use of salt solution over the old dangerous methods of transfusion of blood.

The antivivisectionists deny the truths of Bacteriology. Yet we practical physicians, surgeons and obstetricians *know* by daily experience that Pasteur's and Lister's researches are the basis of most of our modern progress. Are Hadwen, Harrigan, Snow and their colleagues right and have all medical colleges all over the world in establishing chairs of Bacteriology and all medical men in believing bacteriological diagnosis of such importance and in basing upon the germ theory their antiseptic treatment which has so revolutionized modern surgery been wholly wrong? The germ theory is as well estab-

lished as the doctrine of the circulation of the blood.

II. My second reason for believing that anti-vivisection injures character is that, by putting a greater value on the well-being and the lives of monkeys, guinea pigs, rabbits, dogs, cats, mice and frogs than on the lives of human beings, it fosters a spirit of cruelty to human beings.

Is it not a cruel passion which will lead men and women to write such letters and to print such epithets as I have quoted? Is it a right thing to mis-state the facts of operations, and after the falsity of the charge has been proved, still continue for years to hold up men with human feelings and sensitive to abuse before the community as vile monsters of cruelty? Nay, more than this, is it not an extraordinary thing that those who so vehemently denounce human vivisection are even among its advocates?

When I was professor of surgery in the Woman's Medical College of Pennsylvania I took as the topic of my address at one of the commencements, "Our Recent Debts to Vivisection." Mrs. Caroline Earle White published "An Answer to Dr. Keen's Address Entitled, Our Recent Debts to Vivisection." At the bottom of page 4 I find the following: "I take issue with Dr. Keen in the second place where he says, 'These experiments cannot, nay, must not, be tested first upon man.' I assert, on the contrary, that *in the majority of cases they must be tested first upon man* [Italics my own] or not tested at all, because no important deductions can ever be drawn with any degree of certainty from experiments upon animals, since in some inexplicable way their construction is so different from that of man."

The statements in the latter portion of the

concluding sentence will much amuse anatomists, physiologists and biologists, or, in fact, any one who really knows anything about science. With minor modifications, man and the lower animals are alike in almost all particulars, both in structure and function, in health and disease.

The extraordinary fact is that Mrs. White asserts that experiments must be tested first upon men or not tested at all. That is to say, we must either experiment upon human beings or else continue in exactly the same old rut as before and never make any progress, for every departure from prior practice, however slight, is an "experiment."

If this basic doctrine of antivivisection had held good for the last fifty years Lister would not have been able, after carefully testing his antiseptic method upon animals and having found it successful, then, and not before then, to try it upon man.² By this means he became, as the *British Medical Journal* has just called him, "The Maker of Modern Surgery."

But on page 10 of Mrs. White's "Answer" is found the following flat-footed advocacy of human vivisection: "Dr. Keen mentions that in India alone 20,000 human beings die annually from snake bites and as yet no antidote has been discovered. How can we search intelligently for an antidote, he says, until we know accurately the effects of the poison. I should reply that in order to find out the effects of the poison and to search also for an antidote, the best plan would be for the experimenters to go to India where they could find as large a field for investigation as they require in the poor victims themselves. *Here is an opportunity such as is not often offered*

² See "Modern Antiseptic Surgery and the Rôle of Experiment in its Discovery and Development." American Medical Association, Chicago.

for experimenting upon human beings, since as they would invariably die from the snake bites, there can be no objection to trying upon them every variety of antidote that can be discovered. Nothing seems to me less defensible than these experiments on the poison of snake bites upon animals since it is the one case in which they could be observed with so much *satisfaction and certainty upon man*!" [Italics my own.]

Such a proposal is as absurd as it is cruel. Even if the experimenter could afford sufficient time and money to go to India for months or rather for years, how could he arrange to be present when such unexpected accidents occurred? How could he have at hand in the jungle the ether, chemicals, assistants, tables, tents, food and drink, and the necessary yet intricate and delicate instruments? And even if he had all of these, how could he work with the calmness and the orderly deliberation of the laboratory when a fellow human being's life was ebbing away and every minute counted in such a swift poison? The proposal is cruel and revolting and would never be accepted by any investigator.

But Mrs. White is not the only one who is guilty of making such a proposal. Many antivivisection leaflets and pamphlets express the wish that the vivisectors should be vivisected. In a pamphlet entitled "Vivisection in America," by Frances Power Cobbe and Benjamin Bryan, and freely distributed in the United States, I find on page 15 the following in a letter from a then Senator of the United States: "It would be much better to dissect men alive occasionally for the general welfare because the attendant phenomena and demonstration of the victims being of our own particular form of animal would be far more valuable than the result of our ob-

servation upon the physical structure illustrated in the agonies unto death of the helpless creatures around us." The English is as distressing as the proposal is astounding.

Let us give one more illustration of the effect of antivivisection in encouraging cruelty.

To-day, the plague, cholera and yellow fever no longer terrify Europe or America. What is the reason for this? Primarily and chiefly the discovery of the germs of cholera and of the plague by bacteriological methods, which in turn are very largely the result of experiment upon animals, and of the means of the transmission of yellow fever, though as yet not of its cause. In the latter case experiments upon animals were out of the question because it is impossible to transmit yellow fever to animals. They are not susceptible to the poison. So a number of noble medical men and others volunteered to have experiments tried upon them. The very first experiments were tried upon medical men. These men slept in a stifling atmosphere for twenty nights in the beds in which yellow fever patients had died, and in their very clothes, clothes soiled with their black vomit, urine and feces; tried to inoculate themselves by putting some of the black vomit into their eyes, or by hypodermic injections, etc., but all in vain. By none of these methods were they able to inoculate themselves with the fever. One step more was requisite, — to learn whether a well man bitten by an infected mosquito, but having been exposed to no other possible source of infection, would contract the disease. Dr. Carroll, of the Army, was the first to offer himself, and nearly lost his life. Others followed. Several lost their lives, among them Dr. Lazear, at the beginning of a most promising career. His tablet in the

Johns Hopkins Hospital, in the fine words written by President Eliot records that "With more than the courage and the devotion of the soldier, he risked and lost his life to show how a fearful pestilence is communicated and how its ravages may be prevented."

Contrast with this a cruel letter in the New York *Herald* of Aug. 2, 1909, written by a woman: "Science is based upon such firm foundation, indeed, that it can at a moment's notice be tumbled down and become a wrecked mass by a mosquito! Not only this, but these life-long vivisectors could not even prolong their own lives. Undone by a mosquito! I shall always have unbounded admiration for that clever insect."

This self-sacrifice for humanity has made us masters the world over of yellow fever, has made possible the Panama Canal, has saved many thousands of human lives and millions of dollars in our own Southern states alone, and yet a woman can feel "unbounded admiration for the clever insect" which slew these heroes and had devastated cities and countries for centuries! Does not such antivivisection zeal "hurt character"?

Two men are especially obnoxious to the antivivisectionists: Pasteur, whose demonstration of the cause of that form of infection known as puerperal or childbed fever alone would have made his name immortal; and Lister, whose application and extension of the principles laid down by Pasteur have revolutionized all modern surgery.

I need not argue the case for Pasteur, Lister and modern antiseptic surgery. Excepting the antivivisectionists, every intelligent man and woman the world over *knows* that modern surgery has been made safe by their researches. Let me give a single instance.

In the charming Life of Pasteur by René Valery Radot, it is stated (II, p. 16) that, hoping to overcome the almost invariably fatal results of ovariotomy in the hospitals, the authorities of Paris "hired an isolated house in the Avenue de Meudon, a salubrious spot near Paris. In 1863 ten women in succession were sent to that house. The neighbors watched those ten patients entering the house, and a short time afterward their ten coffins being taken away!" When I was the assistant to the late Dr. Washington L. Atlee in the late 60's, two patients out of three upon whom he, the foremost ovariotomist in America, operated died.

To-day, thanks to Pasteur and Lister and modern surgery, based upon experiment upon animals more than upon any other foundation, not more than two or three in one hundred die after ovariotomy. Yet, if the antivisectionists had prevailed, the horrible mortality of the earlier days and even the tragedy of the ten women and the ten coffins would still exist. Is not this cruelty?

Let me take another illustration of a similar cruelty, a form especially interesting to women. In the *Journal of the American Medical Association* for April 22, 1911, Prof. J. Whitridge Williams, professor of obstetrics in the Johns Hopkins University, states the following facts: In 1866 Lefort showed that of 888,312 obstetrical cases in the hospitals of France up to 1864, 30,394 women had died of puerperal fever; that is to say, 3.5%, or about every twenty-seventh mother. From 1860 to 1864 the mortality in the Maternité of Paris had risen nearly fourfold, to 12.4%. In December, 1864, it rose to 57%, that is to say, *more than one half* of the women who bore children in that month died of childbed

fever! In Prussia alone, in the sixty years from 1815 to 1875, Boehr showed that 363,624 women had died of the same fever and estimated that every thirtieth prospective mother was doomed to death from that cause. In the United States, Hodge, of Philadelphia, showed that in the Pennsylvania Hospital from 1803–1833 there had been a mortality of 5.6%, i. e., every eighteenth mother was doomed. Lusk reported an epidemic in 1872 with 18%, that is, almost every fifth mother perished from the same fever!

So late as March, 1879, only thirty-three years ago, at the Paris Academy of Medicine, when the leading men in a debate on childbed fever were at a loss to account for it, Pasteur drew on the blackboard what we now know as the *streptococcus* and declared this little vegetable organism to be its cause. Our own Oliver Wendell Holmes in 1843 was the first who declared on clinical grounds that the doctors and the nurses carried the contamination, but how and why he could not know, for Bacteriology did not then exist. He was followed by Semmelweiss, of Vienna, who, in 1861, still further reinforced the reasoning of Holmes, and for his pains was tabooed by his professional colleagues and ended his life in a madhouse.

The result of Pasteur's researches and the practical application of Lister's antiseptic method to obstetrics as well as to surgery have borne the most astounding and gratifying fruit. For instance, in 1909 Markoe reported in the New York Lying-In Hospital in 60,000 births a maternal mortality of only $\frac{3}{100}$ of 1% and Pinard in 1909 in 45,633 births recorded a mortality of only $\frac{1}{100}$ of 1%, while in 1907 Mermann had been able to report a mortality of only $\frac{1}{100}$ of 1% in 8,700 patients! In other words,

these reports show in round numbers that, taking in the two extremes, the deaths from childbed fever fell from the extraordinary rate of 57 in 100 mothers, or the former usual rate of five or six in every hundred mothers, to one mother in 1,250.

If for fifty years past the antivivisectionists had had their way, all these marvelous results in obstetrics would have been prevented and women would still be dying by the hundred and the thousand from puerperal fever,—an entirely preventable disease. Would it not have been the height of cruelty to stop these experiments? But according to the *Journal of Zoöphily* such wonderful life-saving experiments should be prohibited, “no matter how great the anticipated benefit.”

In surgery, erysipelas, blood poisoning, lockjaw, hospital gangrene, etc., would still be killing our patients right and left; weeks of suffering, to say nothing of danger, would confront every patient operated upon; the modern surgery of the head, of every organ in the abdomen and pelvis, of tumors and of cancer, amputations and many other operations, instead of being almost painless and so safe as they are to-day, would be the cause of prolonged illness, pain and death, in fact, most of them would be deemed entirely impossible of performance,—and they *were* impossible before Pasteur and Lister,—and animals themselves would still be suffering as of old from animal maladies whose causes are now known and whose ravages have been enormously diminished.

Call you not the desire to arrest such experiments cruelty to man and animals alike?

In a speech in the House of Commons, April 4, 1883, Sir Lyon Playfair, the Deputy Speaker, said:

" For myself, though formerly a professor of chemistry in the greatest medical school of this country [Edinburgh], I am only responsible for the death of two rabbits by poison, and I ask the attention of the House to the case as a strong justification for experiments on animals, and yet I should have been treated as a criminal under the present act [the British Vivisection Law] had it then existed.

" Sir James Simpson, who introduced chloroform, . . . was then alive and in constant quest of new anesthetics. He came to my laboratory one day to see if I had any new substances likely to suit his purpose. I showed him a liquid which had just been discovered by one of my assistants, and Sir James, who was bold to rashness in experimenting on himself, desired immediately to inhale it in my private room. I refused to give him any of the liquid unless it was first tried upon rabbits. Two rabbits were accordingly made to inhale it; they quickly passed into anesthesia and apparently as quickly recovered, but from an after action of the poison they both died a few hours afterwards. Now was not this a justifiable experiment upon animals? Was not the sacrifice of two rabbits worth saving the life of the most distinguished physician of his time?"

As this experiment was not for the good of the two rabbits, but, in fact, killed them, in the eye of present-day antivivisectionists it would be wrong, and, if they had their way, illegal and punishable, and Simpson would have lost his life. Would not this be cruelty?

Let me state briefly two of the most recent discoveries in medicine and surgery:

1. Vaccination against typhoid fever. Starting from Pasteur's researches on animal diseases and continued by various observers and especially in

the last few years by Sir Almroth Wright, of London, there has been developed chiefly by experiments upon animals a "vaccine" to prevent typhoid fever. When by such experiments the method was found to be sufficiently safe, it was tried on man.

In the Boer War, and among the German troops in their African colonies, tentative trials of its value were made. Now it has been tried in the United States Army on a larger scale and with more astonishingly good results than in any previous trials.

During the Spanish War there were 20,738 cases of typhoid and 1,580 deaths; nearly *one fifth of the entire army* had the disease. It caused over 86% of the entire mortality of that war! In some regiments as many as 400 men out of 1,300 fell ill with it. How this would handicap an army in the field — to say nothing of deaths — is very evident.

Lately in our army on the Mexican border, for months under war conditions, except as to actual hostilities, *there has not been a single soldier ill with typhoid*. This is due partly to better sanitation, which in turn is due largely to bacteriology, but chiefly by reason of wholesale antityphoid vaccination. This is evident from the fact that during the year June 30, 1908, to 1909, when this vaccination was purely voluntary and the army was not in the field, proportionally *sixteen times* as many unvaccinated soldiers fell ill with the disease as compared with the vaccinated. On the Mexican border there has been only one single case of typhoid, not in a soldier, but a teamster who had not been vaccinated. So evident are the benefits of this preventive inoculation that Dr. Neff, the Director of Health of Philadelphia, has issued a circular proposing its municipal use,

and also to prevent typhoid in our many summer resorts. In many large hospitals it is extensively used to protect the doctors and nurses from catching the fever.

2. In surgery let me instance the surgery of the chest. This has been the region in which progress has lagged far behind that of all the other parts of the body till within the last five or six years. The reason was that the moment you opened the chest cavity to get at the heart, the lungs, the esophagus, the aorta or the pleura, it was like making an opening in the side of a bellows. The air, instead of being drawn in and forced out through the nozzle (corresponding to the mouth in the case of a patient), passed in and out through the opening in the side of the bellows or the chest. If only one side was opened, breathing was embarrassed, if both sides were opened the patient's lungs collapsed,—breathing was impossible and death ensued.

Sauerbruch, then of Breslau, first devised a large air-tight box or chamber in which the pressure of the air could be increased or diminished at will. The body of the patient, the surgeons, nurses and instruments were all inside the box, and a telephone enabled them to give directions to those outside, especially to the etherizer. The head of the patient with an air-tight collar around his neck protruded outside of the chamber where the etherizer was placed. In such a chamber the chest could be safely opened. But while this was an immense improvement, such a chamber is clumsy, not easily transportable, and is very expensive. The method has done good service, however. It has been improved by others and is in use to-day by many surgeons.

At the Rockefeller Institute, Meltzer and Auer, by a number of experiments on animals, have

lately developed a new, simple and safe method of anesthesia with ether which is revolutionizing the surgery of the chest and to a considerable extent may even displace the ordinary inhalation method of anesthesia. As soon as the patient has been etherized in the ordinary way, a rubber tube is inserted into the windpipe through the mouth. By a foot bellows ether-laden air is pumped into the lungs through this tube, the foul breath escaping between the tube and the windpipe and out through the mouth. Experiments on animals showed that the rubber tube used for so long a time would not injure the vocal cords and so alter or destroy the voice of a patient, nor cause injury to the lungs, and that the method was most efficacious in the surgery of the chest.

I saw Carrel thus keep a dog under ether for about an hour and a half; open both sides of the chest by one wide sweep of the knife, displace the heart and lungs this way or that; expose and divide the aorta between two clamps (to prevent immediate fatal hemorrhage); do a tedious and difficult operation on the aorta; unite its two cut ends; replace the heart and lungs, and close the wound. An hour later the dog, which showed no evidences of suffering, was breathing naturally, and in time recovered entirely. What this method means in injuries and diseases of the heart, in gangrene, abscess and tumors of the lungs, in cancer of the esophagus, and foreign bodies lodged in the esophagus or in the bronchial tubes, and in diseases of the aorta, one can hardly yet even imagine.

These experiments have done more for the surgery of the chest in three or four years than all the "clinical observation" of cases in a thousand years. The method has already been tried successfully in several hundreds of cases in man,

and the future has in store for us a new and most beneficent chapter in the surgery of the chest.

Yet if the antivivisectionists had prevailed all these experiments would have been prevented, the doors of the Rockefeller Institute nailed up, and men, women and children have been deprived of the benefits of these splendid discoveries. Call you not that intensely cruel?

Moreover, these very same people in their own households and without the slightest pity will kill rats and mice by turning them over to the tender mercies of cats, by drowning them, by strangling them in traps, by poisoning them with strychnin or phosphorus, or by any other means of "torture"; but they hold up their hands in holy horror when any proposal is made to terminate the lives of other rats and mice almost always without pain and with immense benefit to humanity. They are cruel and callous to human suffering so long as dogs and cats, mice and guinea pigs escape! And yet, as I have shown, only 26 animals in 1,000 can possibly ever suffer at all!

III. The third way in which the influence of antivivisection injures character is by diminishing the reverence for accuracy. In the *Journal of the American Medical Association* for Feb. 23, 1901, I gave many instances of the "Mis-statements of the Antivivisectionists." These mis-statements were contained in two anonymous pamphlets, and I have two more similar publications which are also anonymous. I have before me also three publications purporting to be replies to that publication of mine, all again anonymous. Is a foe who attacks from ambush worthy of the respect and confidence of the public?

These mis-statements, so far as I know, are still distributed in leaflets and pamphlets without

correction nearly eleven years after their incorrectness was shown. In fact, several of them reappear uncorrected in the *Journal of Zoöphily* for July, 1911.

Let me give a few new instances.

The most prominent antivivisectionist in England is Mr. Stephen Coleridge. On page 183 (April to July, 1907) in the minutes of his evidence before the Royal Commission on Vivisection, I find the following:

“ Question 10952: We may have inspection, but still we may ask a person of character when he saw the experiment what his opinion of it was. Will you not accept that?

“ Answer: Certainly not, because I think that all these experimenters have the greatest contempt for the Act of Parliament. They would deny a breach of this act just as I should deny a breach of the Motor Car Act. I drive a motor car and *when I go beyond the speed limit and the policeman asks me I say, ‘No, I am not going beyond the speed limit.’* [Italics mine.] Nothing would keep me from going beyond the speed limit except the presence of a policeman in the car; and nothing will keep the experimenter within the four corners of the act except an inspector in the laboratory.

“ Question 10953: Surely, if you were asked about the speed limit and gave your word that you had not exceeded it, you would not expect to be disbelieved?

“ Answer: No, I do not say so. I said last year that of course I did, and I exceed it every time.

“ Question 10954: You are apparently not very ethical about motor cars. If you apply your principles as regards motoring to the physiologists, you have very little to say against them?

"Answer: What I have to say is that they regard the Vivisection Act of 1876 with the same contempt that I regard the Motor Car Act as regards the speed limit."

In quoting also a letter from the Home Office Mr. Coleridge admits mutilating it, for in reply to Question 11015, he says, "I seem to have left out the important item of it." See also Questions 10301, 11011, 11024 and 19967 to 19973.

Comment upon Mr. Coleridge's testimony is superfluous.

Again, in the "Black Art of Vivisection," Mr. Coleridge states, "The Pasteur Institutes in Paris and elsewhere have entirely failed to prevent people dying of hydrophobia." Yet the fact is that formerly 12 to 14% of persons bitten developed the disease and every one of them died, whereas the result of the Pasteur treatment in 55,000 cases has diminished the mortality to $\frac{7}{100}$ of 1% of those bitten.

I cite another English instance. In "The Nine Circles," second edition, pp. xxiii–xxviii, is published a reply to a letter by Sir Victor (then Mr.) Horsley, published in the London *Times*, Oct. 25, 1892, a copy of which I have before me. The book, as the London *Times* points out in an editorial, was

"Compiled under his [Dr. Berdoe's] direction. He was entrusted with the task of reading the proofs and was supposed to safeguard the accuracy of 'the compiler.' He now admits that he overlooked in Miss Cobbe's preface a passage in which she 'was careful to say, . . . so far as it has been possible, the use or absence of anaesthetics has been noticed in regard to all the experiments cited in this book.' Mr. Horsley in the appendix to his letter, which we publish this morning, shows by reference to some twenty cases cited in 'The Nine Circles' how entirely inconsistent with the truth this guarantee is, and Dr. Berdoe's reluctant acknowledgment completes the proof."

A still more remarkable letter appears in the same number of the *Times* from Prof. C. S. Sherrington, of Liverpool. He says, "I find in the book ['Nine Circles'] three instances in which I am by name and deed held up to public abhorrence. From each of the three statements made about me the employment of anesthesia in my experiments is studiously omitted, although expressly mentioned in each of the published papers on which those statements are professed to rest. In two out of the three statements I am accredited with inflicting upon living animals, and without the employment of anesthetics, a dissection and procedure that *I pursued only upon animals which were dead.*"

Accordingly the society withdrew the book from the market, but later published a revised second edition.

In his reply to Professor Horsley's letter calling attention to the mis-statements in the first edition, the excuses that Dr. Berdoe gives in the second edition are very extraordinary. Among them, for example, one is "the sentence about testing the sight after recovery from the anesthetic was overlooked."

Another excuse is "this was taken at second hand from another report where the question of pain was not under discussion." In a third he states, "We have not always access to 'original papers' and can only rely on such reports and extracts as are given in the medical and other journals."

I ask whether it is fair, square dealing to base grave charges of cruelty on sentences "overlooked" and on "second-hand" misinformation?

But Miss Cobbe was by no means satisfied with misrepresenting English medical men. In the pamphlet "Vivisection in America," I find on

page 9 a letter by a Boston lawyer in which he says of American experiments, "In other words, animals are dissected alive, *usually without the use of anesthetics*, for the supposed (but illusory) gain to science." [Italics mine.] I have already given a table showing that only 26 animals out of 1,000 could by any possibility have suffered any pain, and that even these were anesthetized. Is it correct, then, to say that animals are "dissected alive usually without anesthetics"?

Near the top of page 45 Miss Cobbe's pamphlet reads as follows: "Dr. Ott, in the *Journal of Physiology*, Vol. II, p. 42, describes a number of experiments upon a number of cats *not etherized* [italics my own] for the purpose of making observations on the physiology of the spinal cord."

I find that on reading the original paper there were four series of experiments:

In the first series, there were twenty experiments. In the first experiment the animal was killed before the experiment began. In eleven other instances it is expressly stated in each experiment that the animals *were* etherized. Dr. Ott informs me that the other eight were so etherized and that he invariably etherizes the animals.

In the second series, there were eight experiments. On page 52 of the *Journal of Physiology* it is stated that the animals *were* etherized.

The third series consisted of ten experiments, and on page 54 it is expressly stated that the animals *were* etherized.

The fourth series consisted of ten experiments and again on page 60 it is stated that the animals *were* etherized. We see, therefore, that Miss Cobbe's statement "not etherized" is untrue, for of 48 animals, one was killed; in 39 it is expressly stated that they were etherized; leaving

only 8 out of 40 as to the etherization of which nothing is said, though it was done.

On pages 45 to 48 I find a series of experiments on the surgery of the pancreas by the late Dr. Senn, of Chicago. This was in July, 1886, at a time when the surgery of the pancreas was just beginning. Two pages and a half of Miss Cobbe's pamphlet are devoted to describing in detail experiments which, as no mention is made in her pamphlet of ether, one would certainly suppose were done without ether and would certainly be very painful. On looking at page 142 of the original paper I find that it is expressly stated that the animals *were* etherized.

In a series of experiments by Halsted, under experiment No. 6, p. 51, Miss Cobbe's pamphlet says, "Died under the operation, which was carried on for two hours on a young, small brindle dog," which would imply two hours of "agony." The original expressly states the fact that this dog died *from the effects of the ether*.

So much for Miss Cobbe's idea of reproducing accurate accounts of the experiments to which she refers.

An amusing instance of misrepresentation is seen in an antivivisection comment made on one of Carrel's experiments on a cat. "How intense the suffering must have been to cause a cat (an animal usually so quiet and reposeful) to spend the day jumping on and off the furniture!" As a matter of fact, the kitten was only "playing with a ball of paper."

Another illustration of the way in which sentences are detached from their context and made to mean quite different things and repeatedly published years after the falsity of the statement has been demonstrated is shown by the constant inclusion of Sir Frederick Treves among the

opponents of vivisection. He stated of one single investigation that operations on the intestines of dogs in his opinion — other surgeons do not hold the same opinion — were useless as a means of fitting the surgeon for operations upon the human bowel. Ever since this utterance (*Lancet*, Nov. 5, 1898), Sir Frederick Treves has been constantly quoted in the manner mentioned, yet in a letter to the London *Times* of April 18, 1902, he says, "The fallacy of vivisection can hardly be said to be established by the failure of a series of operations dealing with one small branch of practical surgery. No one is more keenly aware than I am of the great benefits conferred upon suffering humanity by certain researches carried out by means of vivisection." This was noticed editorially in the *British Medical Journal* of April 26, 1902. So late as 1909, in the May number of the *Journal of Zoophily*, the editor-in-chief, Mrs. Caroline Earle White, reprints from the *North American* of April 12, 1909, her signed letter, and implies that Sir Frederick Treves is an opponent of vivisection, seven years after this correction had appeared. In the number of the same journal for July, 1909, the associate editor of the journal prints a letter of denial from Sir Frederick Treves, and yet so late as the number for March, 1911, p. 177, the same old quotation from Sir Frederick Treves is published in the same journal which twenty-two months before had printed his own letter of denial.³

In the *British Medical Journal* of July 8, 1911, p. 82, will be found a speech by Sir Frederick Treves at the annual meeting of the Research

³ Just as I had corrected the proof of this paper, April 29, 1912 Mrs. Caroline Earle White has sent me by mail a reprint of her letter of April 12, 1909, with the same misleading quotation, thirty-three months after Sir Frederick Treves' letter of denial had been printed in her own journal.

Defence Society in which, alluding to the great progress made in the science of medicine, he says, "This progress has in the main been accomplished by experiments on animals." Ought not his name hereafter to be omitted from the list of the opponents of vivisection?

A postal card issued by the American Antivivisection Society in Philadelphia (there are several others of the same sort) presents a picture of a large dog with his mouth gagged wide open and his paws tied "without anesthetic." The object of the gag, of course, is to prevent the animal from biting before and while it is being etherized. It is absurd to state that this produces any pain, but a guide at the traveling antivivisection exhibition explained to two of my friends that it was used to *break the jaws of the dogs!* and that this was done "without anesthetics." But in nearly all our surgical operations within the mouth, on the tonsils, cleft palate, the tongue, etc., we employ gags of various kinds to keep the mouth wide open. To show how little annoyance this causes, here is a picture of a little girl, four years old, my own granddaughter, with a mouth gag which I have used many times over with children and adults in operations about the mouth. This particular photograph, it will be observed, was taken also "without anesthetic." It was not necessary to tie her hands and feet as is done with dogs, for the child regarded the whole proceeding of photographing her with her mouth wide open as a "lark," and sat as still as a mouse. Is it necessary to add that her jaw was not broken?

Miss Britton, in her \$300 antivivisection prize essay (*Our Dumb Animals*, January, 1910) vividly describes an operation (removal of the breasts of a nursing mother dog) which was *never done at all.* This fictitious operation is

described in the "Nine Circles" (second edition, p. xxviii); again it appears in Dr. Albert Leffingwell's essay, "Is Science Advanced by Deceit," published in 1900. In 1901 Professor



Bowditch called Dr. Leffingwell's attention to the fact that no such operation was ever done. In Dr. Leffingwell's collected essays entitled

"The Vivisection Question," on page 169 of the second revised edition (1907), there is, in a footnote, a correction admitting that no such operation was ever done, but on page 67 of the same edition, a description of this same operation still appears uncorrected, six years after Bowditch's letter had been received and the mis-statement acknowledged.

In the Antivivisection Exhibit which was shown in New York, in the winter of 1909-10, Professor Lee states that there was "an oven heated by gas burners which contains the stuffed body of a rabbit and which the attendant tells you is used for the purpose of baking live animals to death, and this also is performed without anesthetics." Then to add still further pathos, the note at the end of the label on the oven said "gagging, muffling or severing of vocal organs prevents tortured animals giving voice aloud piteously to such terrible suffering." As a matter of fact, "the oven is an apparatus intended for the *incineration of the . . . refuse of a laboratory!*" I might add that it is a constant practice in medicine and surgery now to use various forms of apparatus for the purpose of "baking" an arm, leg or other part of the body, and lately a patient of mine has had her arm "baked" almost daily for weeks at a temperature up to 300° F. with great benefit.

In the exhibit of the American Antivivisection Society in Philadelphia in November, 1911, a portrait of a dog was shown with a large placard stating correctly that the dog had been stolen from its owner and sold to the University of Pennsylvania for experiment. It omitted to state the further fact, which is perfectly well known, that the dog was kept for identification under Rule I [page 13] was claimed, identified

and turned over to its owner and *not* used for experiment. Such a placard stating half the truth but not the whole truth inevitably leads the public to draw a false conclusion.

The bodies of three dogs were also exhibited, each labeled "The Vivisected Product of a Philadelphia Laboratory." All show gaping wounds; one, in fact, has the entire abdomen and pelvis wide open. Such a condition is utterly incompatible with any research. Surgeons and physiologists when experimenting on animals are necessarily as scrupulously careful in their antisepctic technic as in operations upon human beings. Wounds are accurately closed and carefully dressed. Any experimenter leaving wounds wide open and undressed as are those in these dogs would invite failure in every case, and when he published his results and had to confess to a high and needless mortality, he would discredit himself.

One of these dogs shows an absurd operation in the neck. The great blood vessels from the right and left sides of the neck have been drawn together in front of the windpipe and then tied,—a procedure that is unimaginable to any surgeon. Moreover, from the wide-open abdomen and pelvis the following organs have been removed: the stomach, all the large and small intestine, except a portion a few inches long, the spleen, the pancreas, both the kidneys and the bladder. The liver, however, is left. Cannot even any non-medical person of ordinary intelligence see that if all these organs were really removed and, in addition, the great blood vessels of the neck on both sides were really tied, thus cutting off almost all of the blood supply to the brain, and then the neck and the abdomen were left wide open, the death of the animal upon the table would be inevitable?

About a dozen medical men, all teachers in medical schools, after careful inspection of these dogs, unite in believing that all or nearly all of these mutilations must have been done *post mortem* and not during life. Moreover, there is no *evidence* that these animals were really "vivisected," that is, operated upon during life.

Still further, granting that all these operations were done for research and during life, if the animals were etherized no pain would have been felt and no cruelty perpetrated. The significant omission to say anything as to any anesthetic, like the omission as to the restoration to its owner of the stolen dog, entirely misleads the public.

Dr. Henry P. Bowditch ("Animal Experimentation," p. 72) quotes an extraordinary statement of the late Henry Bergh, an ardent anti-vivisectionist. Mr. Bergh states that "Robert MacDonald, M.D., on being questioned, declared that he had opened the veins of a *dying person*, remember, and had injected the blood of an animal into them many times and had met with brilliant success. In other words, this potentate has discovered the means of thwarting the decree of Providence when a person was dying, and snatching away from its Maker a soul which He had called away from earth." I have happily been able to rescue quite a number of dying persons who but for my timely aid would have been dead persons. Instead of supposing that I had "thwarted the decrees of Providence and snatched a soul from its Maker," I have always been under the impression: (1) that it was not in my feeble power to thwart the decrees of the Almighty, and (2) the very fact that I was able to save a dying person from death was the best evidence that the decree of Providence was that the patient at that time should live and *not die*.

But it seems that in the catechism of antivivisection it is an impious crime to save the life of a *dying* person, though I suppose it is proper to save the life of a patient who is only "sick."

In the *Journal of Zoöphily* for April, 1910, p. 44, under the caption "Still More Barbarity," is an editorial signed "C. E. W.," the initials of the editor-in-chief. In this editorial it is stated as to certain experiments of Dr. Wentworth, of Boston, that they were "upon between forty and fifty little children in the Children's Hospital of that city, every one of whom died after the performance of his operation." The "casual reader" would certainly understand that every one of these forty to fifty children died as a *result* of the operation.

Let us see what the *real facts* are (BOSTON MEDICAL AND SURGICAL JOURNAL, Aug. 6 and 13, 1896): In 1895, in a case of possible tuberculous meningitis, Dr. Wentworth did lumbar puncture in order to make a positive diagnosis. Lumbar puncture consists in introducing a rather long hypodermic needle between the vertebrae in the small of the back (lumbar region) and withdrawing some of the fluid from around the spinal cord. This fluid circulates freely to and fro both within the brain and its membranes and within the membranes of the spinal cord. The needle is inserted below the end of the spinal cord, rarely with general anesthesia, sometimes with local anesthesia of the skin, but generally without even this, as the pain is slight and only momentary.

In 1895 this method of diagnosis was comparatively new. Its value was uncertain, its dangers, if any, were not determined. The appearance of the fluid and the nature of its microscopic contents in human beings were imperfectly known. Dr. Wentworth in this

case used the method for diagnosis. Alarming symptoms appeared, but passed away. The child was proved not to have meningitis and "left the hospital shortly afterwards perfectly well."

In order to determine whether this case was exceptional, and the dangers only accidental, or always to be feared (which if true might compel the entire abandonment of lumbar puncture), he repeated the operation most cautiously at first and finally with surer faith in its safety and value in twenty-nine other cases. In fifteen of the thirty cases the puncture was expressly done in order to make a diagnosis,—meningitis or other diseases of the brain and spinal cord being suspected. In the other fifteen cases, while there probably was no cerebral or spinal disease, it was of great importance to know whether examination of the cerebrospinal fluid might throw any unexpected side-light on these diseases, and if not, it would at least disclose what the normal condition, appearance and microscopic contents of the fluid were.

Forty-five punctures in all were made on the thirty children. In three cases the puncture was made after death. Of the twenty-seven living children, fourteen died. *Not one of the fourteen died from the operation*, but, as the post-mortems showed, from meningitis, tuberculosis; pneumonia, water on the brain, convulsions, etc., as is expressly stated in each case in the paper.

But the editorial says "between forty and fifty little children . . . *every one of whom* died after the performance of the operation." I have before me several antivivisection pamphlets published in New York, Philadelphia and Washington in which Wentworth's cases are narrated as cases of "human vivisection," and it is usually stated

that "many of them died," but the reader would still suppose that it was as a result of the operation. In two of these pamphlets, "brief abstracts" of five cases are given, usually only one to three lines long. The post-mortem reports published in Wentworth's paper showed that these five patients died from meningitis (two cases), infantile wasting, tuberculosis and defective development of the brain and convulsions. Yet the "casual reader" would inevitably suppose that they died from the lumbar puncture as no other cause of death is stated.

When Dr. Cannon pointed out the inaccuracy of the editorial of April, 1910, in the *Journal of Zoöphily*, that same journal in the issue for July, 1911, p. 219, in a paper signed "M. F. L." (the initials of its associate editor) not only did not acknowledge the error, but practically repeated it by saying that Dr. Cannon is "severe on the *Journal of Zoöphily* for having referred last year to Dr. Wentworth's forty-five experiments on children and for having mentioned the fact that the children died after the operation. (Italics mine.)

Is it fair dealing to give such very brief abstracts and omit the most important facts as is done here? Feb. 23, 1901, in the *Journal of the American Medical Association*, I pointed out these mis-statements and what the truth was, but the same pamphlets have been constantly distributed without any correction. In November, 1910, nearly ten years after I had exposed the matter, Dr. Cannon states that one of these pamphlets was sent to a friend of his with a letter from the president of the New York Anti-vivisection Society, saying, "You may rely on them as being absolutely accurate and authentic!" Still worse: In April, 1910, "C. E. W."

enlarges the number from thirty to "between forty and fifty" and actually says that "every one" of them died, and "M. F. L." practically repeats the mis-statement by saying that "the children died after the operation."

Suppose thirty friends dined together at the Bellevue-Stratford, then took a train and as a result of a collision fourteen were killed, would a reporter, and still less an editor, be justified in stating in print "between forty and fifty friends dined last night at the Bellevue-Stratford. Every one of them died shortly after partaking of the dinner" entirely omitting the collision as the real cause of death?

Now after fifteen years, what has been the result of these investigations by Dr. Wentworth and others? Lumbar puncture is a thoroughly well-established means of diagnosis. That it is attended with practically no danger is shown by the fact that it is now a routine practice in certain diseases, even much more important than recording the pulse and the temperature. Holmes (*Archives of Pediatrics*, October, 1908, p. 738) states that he has done the operation "over four hundred times and has never met with an accident."

It is not only always done in some diseases, but is repeated two, three, or more times in the same patient in cases of cerebrospinal meningitis. As I showed in my paper in the *Ladies' Home Journal* (April, 1910) the son of then governor, now Mr. Justice Hughes, of the United States Supreme Court, a student at Brown University, stricken with a violent attack of the epidemic form of the disease, had lumbar puncture done three times; the first time in order to make a diagnosis and also for the injection of Flexner's serum, the second and third times for two other

injections of the serum, which snatched him from otherwise practically certain death.

In this disease, Royer (*Archives of Pediatrics*, October, 1908, p. 729) says, "It is absolutely necessary to do a lumbar puncture" to make a diagnosis, and Dunn (*American Journal of Diseases of Children*, February, 1911) says emphatically, "Without lumbar puncture a diagnosis of cerebrospinal meningitis is absolutely without value for scientific, statistical or therapeutical purposes." As there are half a dozen different forms of meningitis, and the remedy for the deadly epidemic form is of no use in the other forms, lumbar puncture, the only absolutely positive means of differentiating them, cannot be dispensed with.

Moreover, its use has been broadened, as shown in the case of young Mr. Hughes. No longer are we content to use it merely as a means of diagnosis, but it is the only means of successful treatment of that terribly fatal malady. It is also used for diagnosis in several surgical diseases and injuries. Moreover, the method of spinal anesthesia, which is most useful in cases in which other methods of anesthesia are too dangerous, is exclusively by means of lumbar puncture, the cocaine or other local anesthetic being injected around the spinal cord by the hypodermic syringe.⁴

When a witness is called, it is not allowable for the party calling him to accept a part of his testimony and refuse to accept the rest, yet this is precisely what the opponents of research do. They always cite, for example, the late Professor

⁴ Those who wish to consult by far the best statement for general use of the steps by which epidemic meningitis has been conquered and the results of the new but now thoroughly well-established serum treatment by lumbar puncture can obtain a copy of Dunn's paper on this subject (no. XXI of the series) by enclosing four cents (or fifty cents for twenty-five copies) to the *Journal of the American Medical Association*, Chicago.

Bigelow, printing his earlier utterances based on the suffering he saw at Alfort in the pre-anesthetic days, but they carefully omit the following later expression of opinion: "The dissection of an animal in a state of insensibility is no more to be criticised than is the abrupt killing of it, to which no one objects. The confounding of a painful vivisection and an experiment which does not cause pain,—either because the animal is under ether, or because the experiment itself is painless, like those pertaining to the action of most drugs, or because it is a trivial one and gives little suffering,—has done great damage to the cause of humanity, and has placed the opponent of vivisection at a great disadvantage. . . . A painless experiment upon an animal is unobjectionable." ("Anesthesia. Addresses and Other Papers," Henry J. Bigelow, Boston, 1900, p. 371.)

So, too, when the statements of Horsley, Ott, Crile and others that the animals were anesthetized and suffered no pain are shown to anti-vivisectionists, they reply, "We do not believe it, for the only testimony to this insensibility to pain is that of the vivisectors themselves." They greedily accept as true all their other statements as to the operations they did, etc., down to the minutest details, but they refuse to accept those as to anesthesia. No court of law would sanction such a course.

In reviewing the preceding mis-statements and those quoted in my former paper ("Mis-Statements of the Antivivisectionists," *Journal of the American Medical Association*, Feb. 23, 1901) I have been compelled to conclude that it is not safe to accept any statement which appears in antivivisection literature as true, or any quotation or translation as correct, until I have compared them with the originals and verified

their accuracy for myself. Not seldom this is impossible, as no reference to the volume, month, day, or sometimes even the year of publication is given.

Lest the reader think this too severe a statement I will refer to only one instance in the anonymous pamphlet, "Human Vivisection," in addition to others already shown to be grossly inaccurate.

On page 9 in the account of Sanarelli's five experiments in the endeavor to inoculate yellow fever, the phrase "the final collapse" appears as an alleged translation of the original Italian. The word "*final*" does not occur in the original. Moreover, the collapse was not "*final*," for every one of the five patients recovered, yet the pamphlet says that "some if not all of them died." The phrases "scientific murder" and "scientific assassination" are also freely used. Even the cover and the title page of this pamphlet have as a motto, "Is scientific murder a pardonable crime?" As not a single patient died, were they really "murdered" or "assassinated"?

CONCLUSIONS.

In thirty years the sixteen [British] Anti-Vivisection Societies have received more than £100,000 (\$500,000) according to Mr. Stephen Coleridge's testimony before the Royal Commission on Vivisection (Questions 10256 to 10260). The American societies have had many bequests given to them, and in the aggregate must have also spent a large sum of money.

On the other side, the friends of research and progress have had little money, have had to stop research and waste a deal of precious time in defending their beneficent researches from the attacks of the antivivisectionists; the rest of the

time they have quietly gone about their business, adding to the sum of our knowledge and forging new and more efficient weapons against disease and death.

What, then, is the net result? What have the friends of research accomplished, and what achievements can the foes of research show? Let me put it in a contrasted tabular form and confine it to what has occurred during my own professional life.

THE ACHIEVEMENTS OF THE FRIENDS OF RESEARCH.

1. They have discovered and developed the antiseptic method and so have made possible all the wonderful results of modern surgery.
2. They have made possible practically all modern abdominal surgery, including operations on the stomach, intestines, appendix, liver, gallstones, pancreas, spleen, kidneys, etc.
3. They have made possible all the modern surgery of the brain.
4. They have recently made possible a new surgery of the chest, including the surgery of the heart, lungs, aorta, esophagus, etc.
5. They have almost entirely abolished lock-jaw after operations and even after accidents.
6. They have reduced the death-rate after compound fracture from 2 out of 3, i. e., 66 in 100, to less than 1 in 100.
7. They have reduced the death-rate of ovariotomy from 2 out of 3 or 66 in 100 to 2 or 3 out of 100.
8. They have made the death-rate after operations like hernia, amputation of the breast and of most tumors a negligible factor.
9. They have abolished yellow fever — a wonderful triumph.

10. They have enormously diminished the ravages of the deadly malaria, and its abolition is only a matter of time.

11. They have reduced the death-rate of hydrophobia from 12 or 14% of persons bitten to $\frac{7}{100}$ of 1%.

12. They have devised a method of direct transfusion of blood which has already saved very many lives.

13. They have cut down the death-rate in diphtheria all over the civilized world. In nineteen European and American cities it has fallen from 79.9 deaths per 100,000 of population in 1894, when the antitoxin treatment was begun, to 19 deaths per 100,000 in 1905 — less than one quarter of its death-rate before the introduction of the antitoxin.

14. They have reduced the mortality of cerebro-spinal meningitis from 75 or even 90 odd per cent to 20% and less.

15. They have made operating for goiter almost perfectly safe.

16. They have assisted in cutting down the death-rate of tuberculosis by from 30 to 50%, for Koch's discovery of the tubercle bacillus is the cornerstone of all our modern sanitary achievements.

17. In the British Army and Navy they have abolished Malta fever which in 1905, before their researches, attacked nearly 1,300 soldiers and sailors. In 1907 there were in the army only 11 cases; in 1908, 5 cases; in 1909, 1 case.

18. They have almost abolished childbed fever, the chief former peril of maternity, and have reduced its mortality from 5 or 10 up even to 57 in every hundred mothers to one in 1,250 mothers.

19. They have very recently discovered a

remedy which bids fair to protect innocent wives and unborn children, besides many others in the community at large, from the horrible curse of syphilis.

20. They have discovered a vaccine against typhoid fever which among soldiers in camps has totally abolished typhoid fever, as President Taft has so recently and so convincingly stated. The improved sanitation which has helped to do this is itself largely the result of bacteriological experimentation.

21. They are gradually nearing the discovery of the cause, and then we hope of the cure, of those dreadful scourges of humanity, cancer, infantile paralysis and other children's diseases.

Who that loves his fellow creatures would dare to stay the hands of the men who may lift the curse of infantile paralysis, scarlet fever and measles from our children and of cancer from the whole race? If there be such cruel creatures, enemies of our children and of humanity, let them stand up and be counted.

22. As Sir Frederick Treves has stated, it has been by experiments on animals that our knowledge of the pathology, methods of transmission and the means of treatment of the fatal "sleeping sickness" of Africa has been obtained and is being increased.

23. They have enormously benefited animals by discovering the causes and in many cases the means of preventing tuberculosis, rinderpest, anthrax, glanders, hog cholera, chicken cholera, lumpy jaw and other diseases of animals, some of which also attack man. If the suffering dumb creatures could but speak, they too would pray that this good work should still continue unhindered.

THE ACHIEVEMENTS OF THE FOES OF RESEARCH.

Not a single human life has been saved by their efforts.

Not a single beneficent discovery has been made by them.

Not a single disease has been abated or abolished.

All that they have done is to resist progress — to spend \$500,000 in thirty years in Great Britain alone, and very large amounts of money in the United States, — and to conduct a campaign of abuse and gross misrepresentation.

They apparently care little or nothing for the continued suffering and death of human beings, the grief and not seldom the ensuing poverty of their families, provided that 26 out of every 1,000 dogs and cats, monkeys and guinea pigs, mice and frogs experimented on shall escape some physical suffering.

They insist, therefore, that all experimental research on animals shall stop and — astounding cruelty — that thousands of human beings shall continue year after year to suffer and to die.

The Age of Experiment is the Age of Progress. This is true in mechanics, in engineering, in electricity, in every department of human knowledge in which experimental investigation is possible.

Medicine is no exception. Stop experiment and you stop progress. But while stopping progress in other departments only means that we shall have no further development in the external comforts and conveniences of life, the arrest of the experimental method in medicine means that progress in the knowledge of the cause and cure of disease shall stop and that our

present sufferings and sorrowful bereavements from the onslaught of cancer, scarlet fever, measles, whooping cough and all the other foes of health and life — especially of our dear children — must continue.

In the last fifty years we have made more progress than in the preceding fifty centuries. I believe that if experimental research is continued and aided, the next fifty years will be still more prolific of benefit to mankind than even the past fifty.

I have absolute confidence in the humanity, the intelligence and the common sense of this nation that they will see to it that this progress shall *not* be halted by the outcries and misstatements of the antivivisectionists.

Dr. S. Weir Mitchell, when visiting the Anti-vivisection Exhibition in Philadelphia, put the matter in a nutshell when he said to one of the guides, "Your exhibition is not quite complete. You should place here a dead baby and there a dead guinea-pig with the motto, "Choose between them."

